

# Buying Contact Lenses Online: A Critique of the Fogel and Zidile *Optometry* Journal Study

BY ROBERT D. ATKINSON | JUNE 2008

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With the emergence of the Internet economy, a host of middlemen in a variety of service, retail, and professional industries have worked to erect all manner of legal, regulatory, and marketplace barriers to hobble online competitors.<sup>1</sup> Rather than compete fairly in the marketplace, these incumbent professional interests have sought to stifle online competition, despite the fact that the benefits to consumers are considerable.

There has been perhaps no profession that has more aggressively sought to fend off e-commerce competition than optometry. With the rise of competitors selling contact lenses over the Internet and offline competitors (like Walmart and Costco), independent eye care professionals (who both prescribe and sell contact lenses), face stiff new competition with regard to the sales of lenses. And because they receive a not insubstantial share of their income from sales of lenses, they have a stake in preserving their market share.

In response, the profession has engaged in a host of tactics to thwart consumer choice and preserve their market share. Its trade association, the American Optometric Association, (which was sued by 32 state attorney generals and ultimately paid a fine and agreed to not collude with manufacturers, and to cease making unsubstantiated claims that one's health is impacted by where one's lenses

are purchased), allegedly colluded with manufacturers to pressure them to cut off sales to Internet sellers.<sup>2</sup> Optometrists have fought to enact state laws to restrict the ability of patients to fill their prescriptions from providers other than the optometrist writing the prescription. They have worked collectively to promote sales of "doctors' only" lenses that consumers could not buy elsewhere (at a cheaper price).<sup>3</sup> They (unsuccessfully) fought Congressional legislation intended to give contact lens consumers the right to choose where they buy their lenses by giving patients an automatic right to copies of their own contact lens prescriptions – despite the fact their eye-glass patients had enjoyed that right for decades.

Therefore, it should come as no surprise that AOA recently published in their journal *Optometry* a new study conducted by Brooklyn College economist Joshua Fogel that purports to find that contact

lens patients are more at risk when buying lenses online than those who buy their lenses directly from an optometrist. Indeed, in an effort to discredit the practice of online sales of contact lenses and build support among legislators and regulators for restrictive legislation, AOA is making a significant effort to tout the study<sup>4</sup>

There is only one problem: the study, “Contact lenses purchased over the Internet place individuals potentially at risk for harmful eye care practices,” has serious methodological limitations and flaws that suggest that it would be inappropriate to draw the conclusions from it that Fogel and the optometric industry are drawing.<sup>5</sup> These flaws include: a sample that is both too small to make valid statistical findings and is potentially biased; inappropriately structured questions that would rule out contradictory findings; and a number of spurious implications that do not support the study’s claims.

One way to sum up why the study is seriously flawed and why it is not possible to state with any confidence that the findings are valid, is that the authors fail to differentiate between people who go online to buy who live in a state with a two-year recommendation regarding check-ups, buy gas-permeable lenses that require a fitting, and buy from a less than fully reputable company from those who live in a state with a one year recommendation regarding check-ups, buy disposable lens (that don’t require fitting) and purchase from a fully reputable company with a national reputation. For the authors, these very real and important differences are not meaningful. In the real world they are extremely meaningful. Until a more balanced and complete study is conducted, it simply is not possible to state anything meaningful about whether buying lenses online place individuals at more or less risks of harmful eye care practices.

## STUDY DESCRIPTION AND RESULTS

The purported purpose of the Fogel and Zidile study is to examine the relationship between Internet purchase of contact lenses and eye care health practices. In particular, they sought to examine the relationship between the practices of contact lens consumers and adherence to FDA recommendations by surveying 151 one students from Brooklyn College in Brooklyn, New York. The authors compared purchase category (doc-

tor’s office, store, or online) with FDA recommendations for purchasing contact lenses, as well as any relationship between time pressure attitudes with the behaviors and beliefs of those purchasing contact lenses.

The results of the study indicate that for individuals who said they purchase contact lenses via the Internet, participant responses on two of 11 FDA recommendations were different in a statistically significant way from those who purchased either from a store or from their doctor’s office. These FDA recommendations dealt with having an eye care specialist make sure the contact lenses fit properly, and ordering contact lenses from a familiar and reliable source. The authors also found some correlations between their Time Pressure Scale and beliefs about information on the Internet. As discussed below, there are serious methodological problems with the two variables and the Time Pressure Scale. As a result, none of the variables or findings in the study are truly meaningful.

## METHODOLOGICAL LIMITATIONS

There are a number of serious methodological limitations with the study that overall make it quite problematic to claim, as the authors’ do, that buying lenses online poses a risk to ocular health.

### Sample

The authors’ sampling method consisted of a convenience sample of 151 Brooklyn College students, where participants were approached at the cafeteria, library, and other public areas on campus. This sampling technique possesses a high likelihood for bias and lacks external validity as it fails to represent a population beyond the small group of college students who participated in the study. For any study’s results to find broad application the findings must possess external validity where the sample of individuals are a representative sample of, in this case, all contact lens consumers. One significant weaknesses of convenience sampling is that results are likely skewed due to any intended or unintended researcher-laden biases in attaining the sample. It is difficult to know if, in attaining the sample, some of the participants were students in some of the researchers’ classes, friends of other participants who decided to participate as well, etc., or if because of the way the sample was attained there were shared characteristics that may have influenced any findings.

In a statement of the limitations of the research, the authors indicate that because the study “includes only sampling of those from 1 location” that it is “not necessarily nationally representative”. (This, as described above, has not stopped AOA and other in the industry to tout the study as representative.) A more accurate statement would be that because of the sampling technique not only is the study not nationally representative but it is not even clear that the findings are representative of contact lens consumers at Brooklyn College, due to the potential bias in the sampling technique.

In addition, the study failed to ascertain relevant background information from its sample. Among those interviewed the study did not indicate how many lived far away from their local optometrist, making it difficult or impossible to utilize the “doctor’s office” method of purchase. This is particular issue for students who may have a family optometrist near their home, but not be able to conveniently access them while away at school. Such a reasonable possibility would suggest that the Internet or other methods may be the only reasonable or viable method for obtaining contact lenses.

There are two other serious methodological problems related to the sample with the study. First, the sample size is quite small, especially considering that on all the questions there are at least 4 cells (off line and online and yes and no) and for some tables, there are 6 cells. The result is that there are very small number of respondents in some cells. For example, in comparing doctor’s offices purchases, with store purchases, and with Internet purchases, if just one more respondent (out of the 151 students) stated they purchased online and got an eye exam, the variable would not be statistically significant. Overall with a sub-sample of only 34 students who stated they purchase contact lenses on the Internet, the power to discern any variables that influence either a dependent variable assessing the following of FDA guidelines or of the “Time Pressure Scale” is wanting. Even if there were findings to be evidenced, such potential findings could not be accurately parsed out with such a small sample size.

#### **Failure to Account for Alternative Explanations**

Turning to an analysis of the authors’ findings, one of the most serious limitations is their failure to include a number of critical queries that are inherently tied to

several of the questions about following FDA recommendations and would serve as potential explanatory variables. For example, the authors admit that the FDA guideline-based statement “I have an eye care specialist check to make sure my contact lenses fit properly after purchasing them” was not conditioned upon whether individuals had purchased a new type of lens and/or gas-permeable lenses or if individuals had purchased disposable (replacement) lenses that they purchase regularly. In addition, the failure to condition this inquiry upon whether the lenses purchased are a new prescription or merely replacements (refills) on a current prescription calls into question the validity of this finding. In other words, if one of the respondents purchased a disposable replacement lens, then they would not need to have the lenses fitted. Perhaps what is most important about this particular finding is that there is no FDA guideline that suggests the consumer should have an eye care specialist check to make sure the lenses fit properly. The authors may have extrapolated this “guideline” from the FDA’s statement that if a consumer is ordering contact lenses on an expired prescription, which is against the law, it is safer to be re-checked by your eye care professional.<sup>6</sup>

The authors also asked respondents about whether they adhered to the FDA guideline that “I have an eye care specialist check to make sure my contact lens prescription was filled properly after purchase.” While 64 percent of those who did not purchase at the doctor’s office did not have an eye care specialist check, more than 43 percent of doctor’s-office purchasers also stated that they did not. This finding is high given that even though the prescription is being filled in the doctor’s office; over 4 out of 10 consumers are not asking their doctor if the prescription is properly filled. However, once again, this variable would provide a more accurate view if the question was conditioned on the type of purchase the consumer was making. If the consumer, and particularly the Internet-based consumer, was merely purchasing their regular refills of disposable lenses, it is counterintuitive that such consumers should, with each refill, make an appointment with an eye care specialist to ensure that their prescription was filled properly. The failure to account for this, or other reasonably competing hypotheses, suggests that this finding may be spurious, but could have easily been conditioned through a simple survey question such as

“what type of contact lens did you regularly purchase during the last twelve months?”

The authors also asked the students to respond to the FDA guideline-based statement “I get an eye examination at least once each year.” In this case, there was no statistically significant difference between Internet purchasers’ responses and those who did not purchase from the Internet (23.9 percent of the former said no, and 23.5% of the latter). Furthermore, the authors indicate that some states recommend receiving eye examinations every two years (and FDA guidelines recognize these states’ decisions), but because the survey only asked limited demographic information (race, gender, age) it is impossible to know if respondents who answered “no” to this statement resided in states where the expiration date set by the state is for two years, which would be in keeping with FDA guidelines.

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The second finding of “significance” analyzes the FDA guideline-based statement “I order my contact lenses from a familiar and reliable place.” Almost 30 percent of Internet purchasers said they did not, compared with almost 10 percent of those who did not purchase online. However, when looking only at students that bought from one source, the authors find that just 5.1 percent of students who bought from stores said they did not purchase from a familiar and reliable source, compared to 8.9 percent of doctor’s offices.

But there is a more serious problem with this question. This particular question contravenes a fundamental tenet of survey construction by proposing a double-barreled question, to which the responder may be answering to one of two issues, and where it is impossible to discern the intent of their response. In this case, respondents who answered in the negative may have been indicating that the place they purchase from is indeed reliable (such as a reputable online company) but not familiar, as they may have only recently begun to purchase disposable replacement lenses online.

Furthermore, there are some online vendors that have a brand awareness that seems to clearly indicate a general familiarity, while others are smaller. The question does not attempt to discern this difference and instead attempts to make the linkage that as a general rule all Internet vendors are less familiar and reliable. Finally, the implication of the term “familiar” may connote something of comfortable and familiar physical surroundings, biasing the question towards doctor’s office purchases, where the setting itself feels “familiar” to those who purchase from their eye-care provider. These weaknesses call into question the interpretation of this particular result.

Finally, the authors assess the issue of buying contact lenses without a prescription. They indeed find that about 30 percent of students buying lenses online claim they did so without a prescription. But so did 22 percent of those buying from a doctors’ office. The fact that selling lenses without a prescription is illegal suggests either that most students either misunderstood this question, or that there are indeed a significant number of doctors’ offices that are breaking the law. An additional difficulty with this question is that the authors did not ask the students where online they bought their lenses. If students were actually getting lenses online without a prescription, it is likely that most were doing so through smaller and perhaps illegitimate online sellers, as opposed to large national online vendors.

Finally, the authors did not control for a key variable, student income. It is possible that students with lower income are more likely to buy lenses online because they are more focused on saving money. As one FTC official stated, “Because online sellers offer prices roughly 30 percent lower than the majority of offline channels, depriving consumers of this choice (buying online) would lead to serious consumer harm.”<sup>7</sup> In this case, if lower income students were denied this choice through restrictive practices by optometrists, they in fact would be less likely to replace their lenses when recommended and their ocular health could suffer.

#### **Spurious Implications**

Beyond the methodological limitations of the research, Fogel and Zidile suggest a number of relationships between online contact lens purchasers and risky be-

haviors or beliefs that are simply not supported. The authors find that a lower number of online consumers have an eye care specialist make sure their contact lens prescription was filled properly compared to those who purchase lenses in doctor's offices. The most salient aspect of this ill-founded implication is that FDA guidelines only suggest such contact "if you think you received an incorrect lens." Thus, because the authors have reworded the guideline to sound as if it was requisite to check with a doctor all of the time, any findings cannot truly tell us whether the respondents were actually complying with the correctly stated FDA guideline.

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The authors also develop a time pressure scale and assume that that because online consumers appear to respond in ways that indicate that they are busy, that they would be at a greater risk of poor behaviors when purchasing contact lenses. However, the authors failed to test this assumption against an alternative hypothesis that online consumers who are busy are more likely to buy replacement lenses in a needful and timely fashion because of the ease of access through the Internet. It is entirely possible that if such an option were unavailable to these kinds of consumers then many of these contact lens purchasers would not stay up to date with their prescriptions and refills, precisely because they are so busy. Indeed, the Federal Trade Commission reports that, "For contact lenses, higher prices or less convenient purchase options may influence how often consumers replace their contact lenses."<sup>8</sup>

The authors also imply that using the Internet carries with it an inherent risk of potentially running into organizations that are not endorsed by government or professional organizations, and therefore may not be reliable places to purchase contacts. The authors then make a blanket statement that such information attained through Internet research should be discussed with a doctor. This overreaching generalization harkens back to an earlier point that not all online contact

lens stores are created equal. While such advice may be critical for consumers thinking of purchasing from a store with little reputation or endorsements, the same should not be true for large national online sellers with a brand reputation and with certifications like the Better Business Bureau Online Reliability Program.

Furthermore, Fogel and Zidile imply that because online consumers are more likely to search for information about complications with contact lenses, these consumers must be suffering from such complications. Alternatively such a finding could indicate that these consumers are conducting in-depth personal research and are better equipped to avoid such complications by educating themselves and being proactive in their eye health. Moreover, it may be that those students who purchased contact lenses online are more active online than students who purchased from their doctors and therefore are also naturally more likely to search online about complications.

Finally, the very premise upon which the authors base their study must be examined. The authors indicate at the inception of the study that the motivation for this research comes from previous results of studies regarding e-pharmacies. The authors infer that whatever potential weaknesses and negative findings may occur amongst consumers who utilize such pharmacies to procure prescriptions, these same weaknesses must also belie the online contact lens industry. The authors suggest that the impetus for their research lies in the possibility that "purchasing contact lenses online can have health concerns of possibly not requiring a contact lens prescription..." Serving as the motivation for this research, this concern is contradicted by a fact the authors articulate a few sentences later, stating that "prescription information is still necessary for contact lens purchases." This direct contradiction calls in to question the theoretical foundation upon which the study is based.

Ultimately, the conclusions that are drawn from Fogel and Zidile's research indicates that not only was the study fraught with flaws in much of the methodology, but many of the implications suggested by the authors are either over-reaching in their scope, fallacious in their reasoning, or silent in refuting equally plausible alternative explanations.

## ENDNOTES:

1. Robert D. Atkinson, “The Revenge of the Disintermediated: How Middlemen are Fighting E-Commerce and Hurting Consumers,” (Washington, DC: The Progressive Policy Institute, January 2001).
2. *Disposable Contact Lens Antitrust Litigation*, No. MDL 1030, (complaints filed M.D. Fla. 1994).
3. *Optometric Management* tells its readers to “sell contact lens that aren’t as readily shoppable or sell private-label lenses.... If you choose your vendors carefully, they’re not readily available on the Internet.” (Jerome Sude, *O.D.*, “Private-Label Vs. Mass-Marketed Contact Lenses: Keep patients in the practice with private-label contact lenses,” *Optometric Management*, April 2005.) In *Contact Lens Spectrum* one optometrist advises his professional colleagues “be more aggressive as a profession in putting up barriers against Internet providers siphoning our patients away.” (“Tracking Patient Retention: Panel practitioners discuss keeping patients within their practices by pre-appointing, contact lens contracts and the personal touch.” *Contact Lens Spectrum*, January 2002.)
4. American Optometric Association, “New Research Shows Consumers Who Purchase Contact Lenses Online Face Greater Eye Health Risks Due to Not Following FDA Safety Recommendations,” (Jan. 4, 2008): <[www.aoa.org/x8999.xml](http://www.aoa.org/x8999.xml)>.
5. Joshua Fogel and Chaya Zidile, “Contact Lenses Purchased Over the Internet Place Individuals Potentially at Risk for Harmful Eye Care Practices,” *Optometry* 79.1 (2008): 23-35.
6. U.S. Food and Drug Administration, “Buying Contact Lenses,” (Updated May 12, 2006): <[www.fda.gov/cdrh/contactlenses/buying.html](http://www.fda.gov/cdrh/contactlenses/buying.html)>.
7. James Cooper, “Public versus Private Restraints on the Online Distribution of Contact Lenses: A Distinction with a Difference” at the George Mason University Mercatus Center symposium on Anticompetitive Barriers to E-Commerce, May 24, 2006. <[www.mercatus.org/repository/docLib/20060518\\_James\\_Cooper\\_Contact\\_Lenses\\_May\\_2006\\_FWPTW.pdf](http://www.mercatus.org/repository/docLib/20060518_James_Cooper_Contact_Lenses_May_2006_FWPTW.pdf)>.
8. “Possible Anticompetitive Barriers to E-Commerce: Contact Lenses,” A Report from the Staff of the Federal Trade Commission, March 2004.

## ABOUT THE AUTHOR

Dr. Robert D. Atkinson is President of the Information Technology and Innovation Foundation, a Washington, DC-based technology policy think tank. He is also author of the *The Past and Future of America's Economy: Long Waves of Innovation that Power Cycles of Growth* (Edward Elgar, 2005).

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